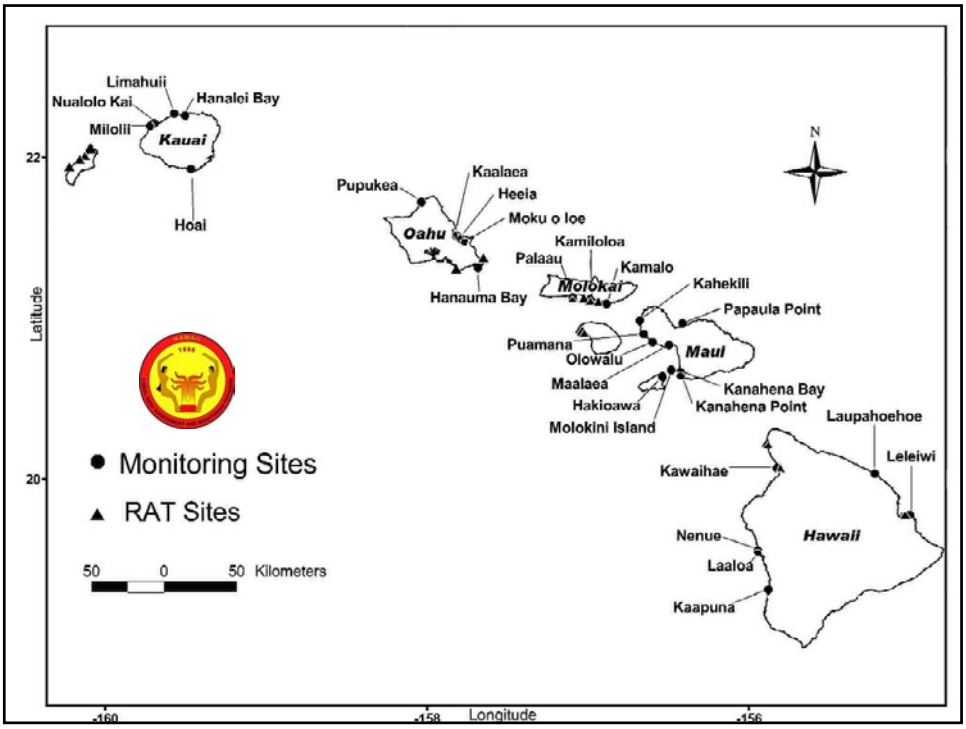
Hawai‘i Coral Reef Assessment and Monitoring Program (CRAMP)

http://cramp.wcc.hawaii.edu

1. What type of monitoring is most useful for understanding the role of pollutant impacts on reefs?

2. What pollutants are most useful to monitor?

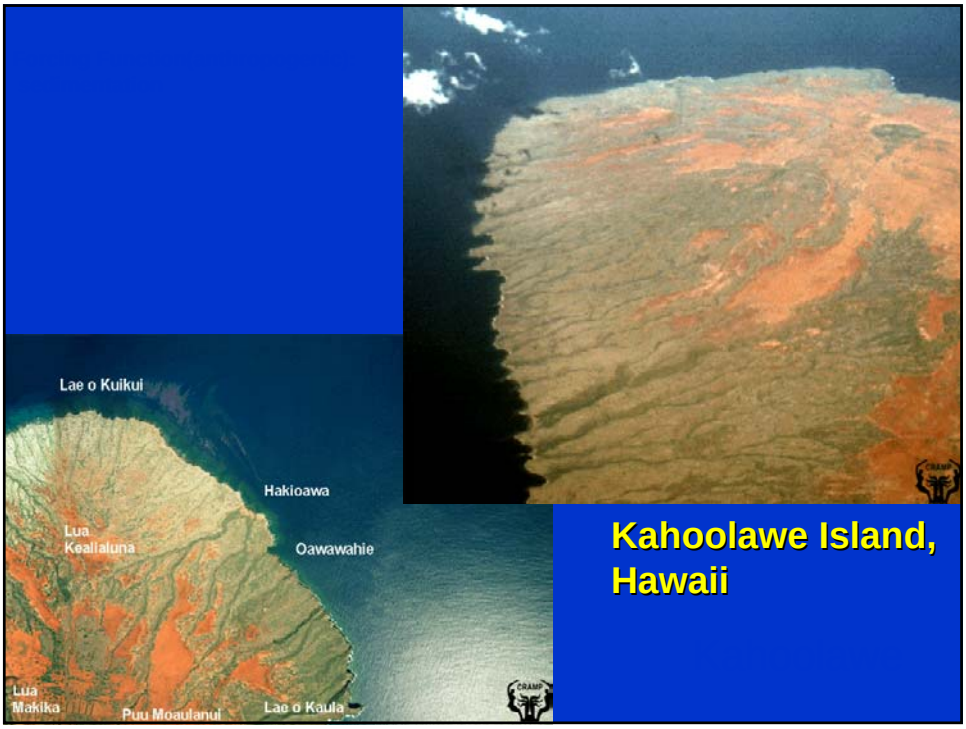
3. What tools should be developed further in order to assess impacts from land based pollution on reefs?



“HOW DO YOU MAKE A DESERT?
Start with any piece of land.
Add goats.”

“Goats are famous for eating plants down to the roots,
leaving nothing but dust in their wake. This is a recipe for erosion.
On Hawaii's steep slopes, cleared of vegetation by goats,
there is nothing to stop the soil from simply washing away.
This ensures that the native plants will not be able to recover,
and also floods the reefs with choking silt.”

Source: http://rarehawaii.org/



Kahoolawe Island, Hawaii

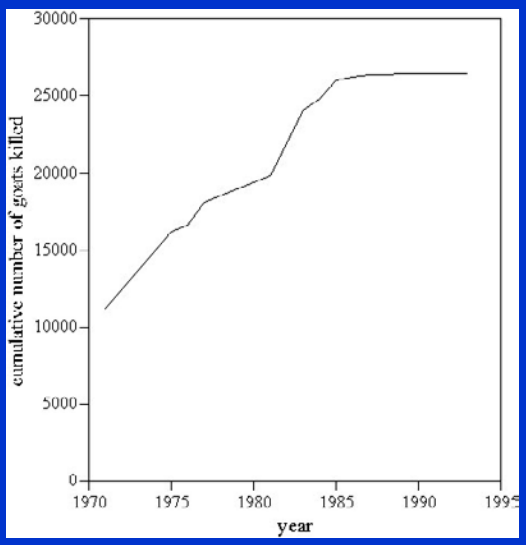
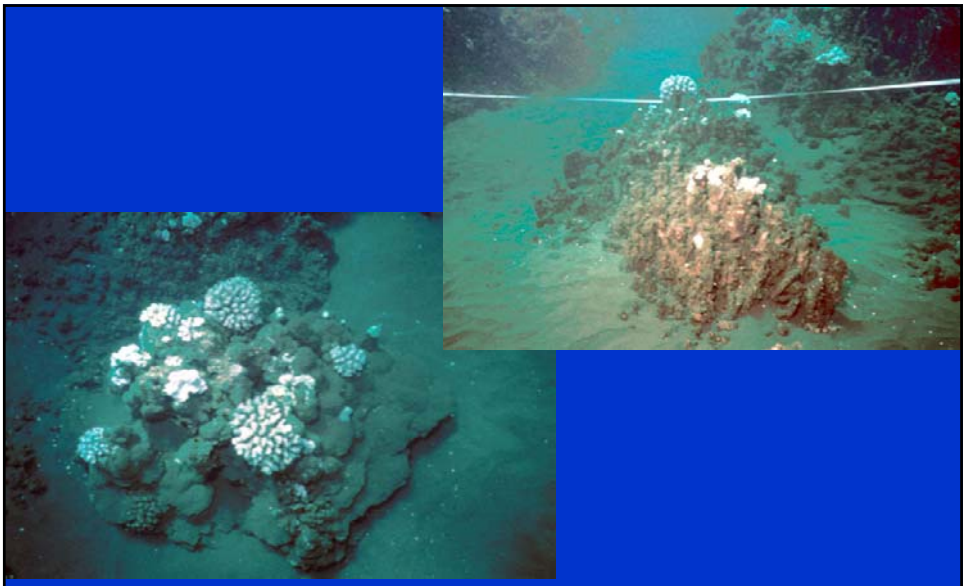
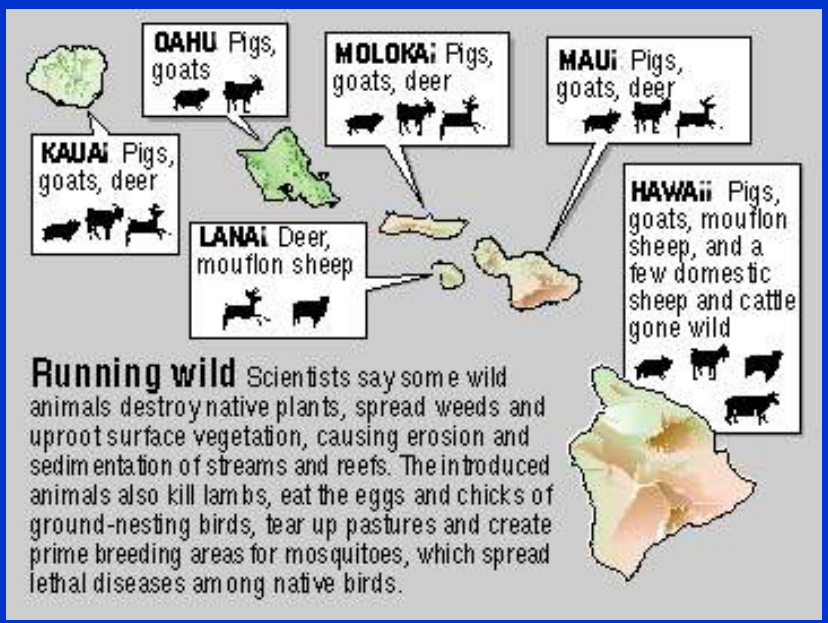


Photo by Larry Csonka

Removal of feral goats on Kahoolawe Island, cumulative total.



Recovery of reefs off the former target island of Kahoolawe after removal of feral goats

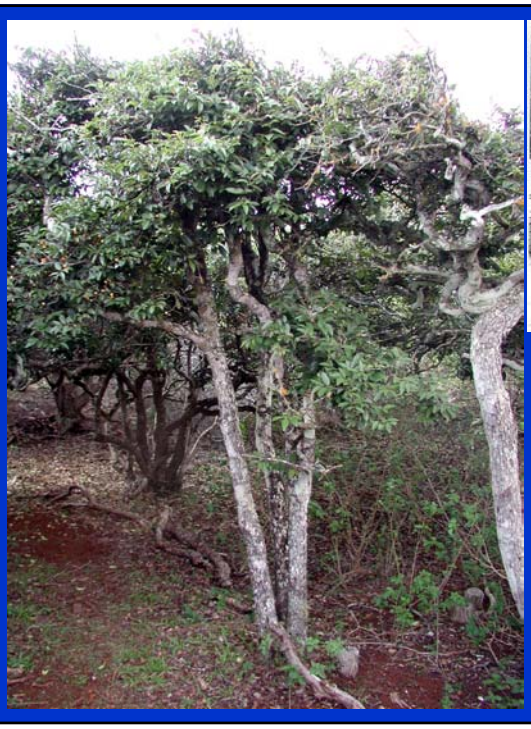


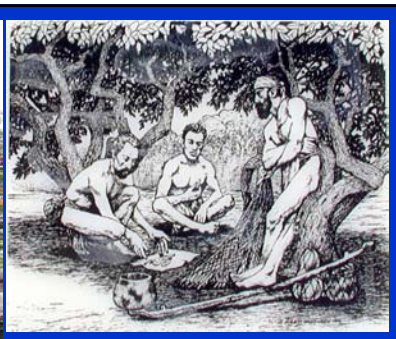
Kip Aolki, Honolulu Star Bulletin

Photo: ERIC NISHIBAYASHI / THE NATURE CONSERVANCY

"The axis deer population has grown out of control on Maui and is damaging native forests and farm crops, an official with the Nature Conservancy said.
Eric Nishibayashi, a conservancy wildlife biologist, estimated the numbers will reach about 9,000 deer by the year 2003 and 20,000 by 2008, if left unchecked."

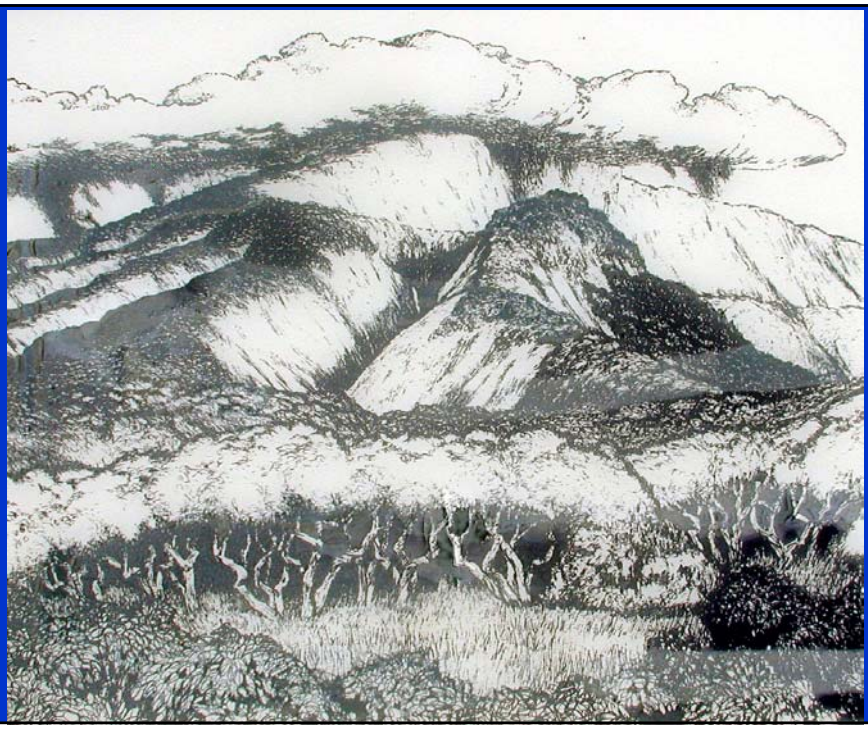
Gary T. Kubota. Honolulu Star Bulletin. Tuesday, August 28, 2001

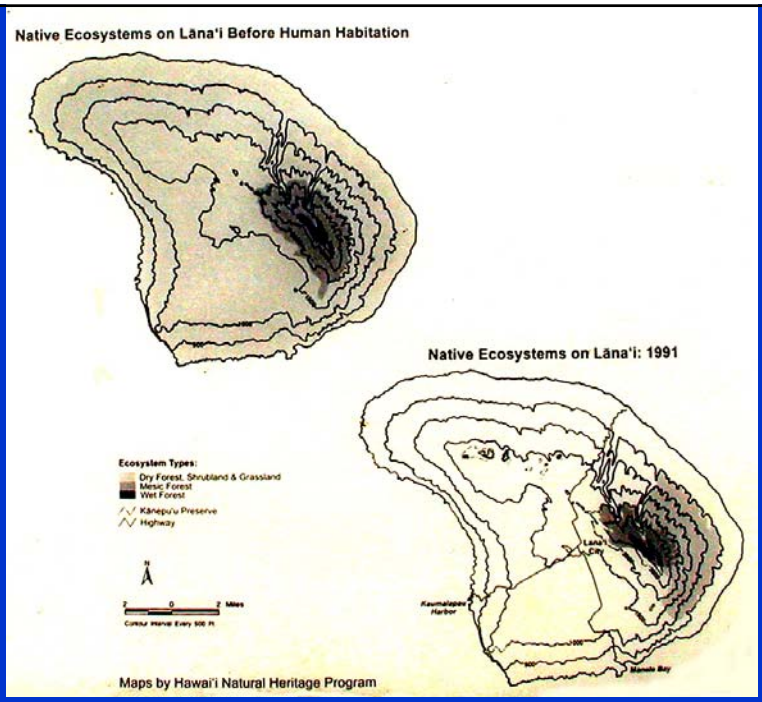




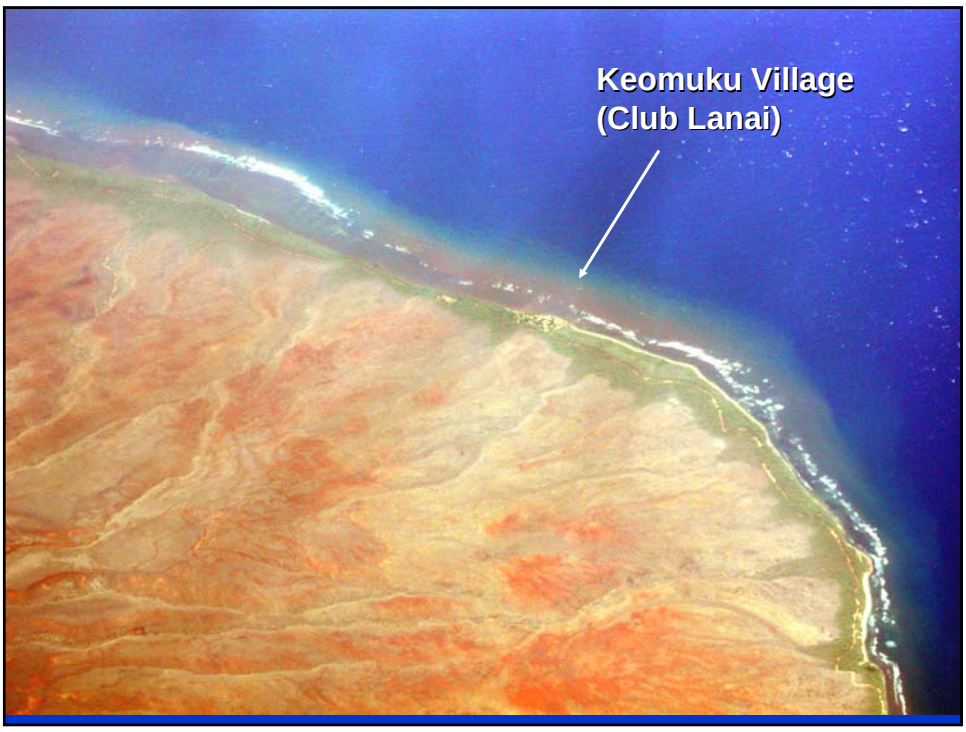
Kanepu'u Preserve Lanai

The Nature Conservancy



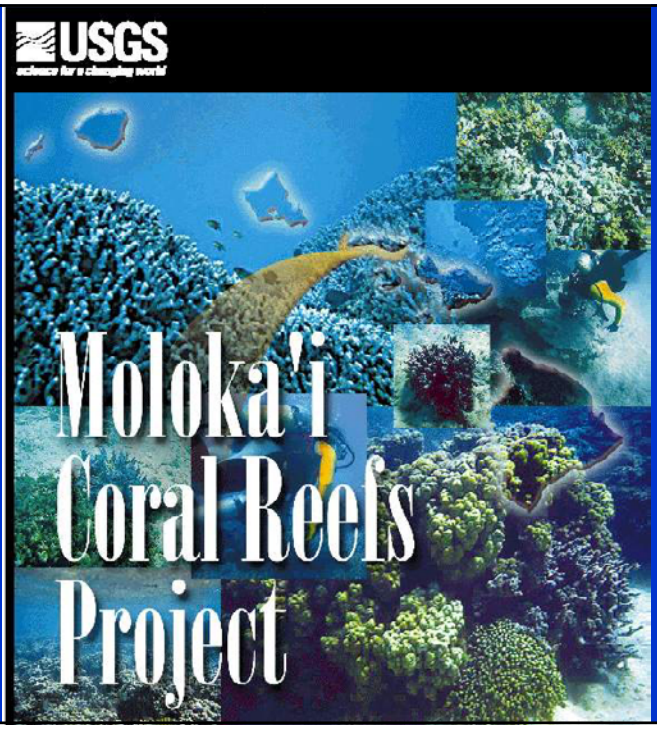

Native Ecosystems on Lāna'i Before Human Habitation
Native Ecosystems on Lāna'i: 1991
Ecosystem Types:
Dry Forest, Shrubland & Grassland
Mesic Forest
Wet Forest
Kānepu'u Preserve
Highway
N
Maps by Hawai'i Natural Heritage Program

"Garden of the Gods", Lanai



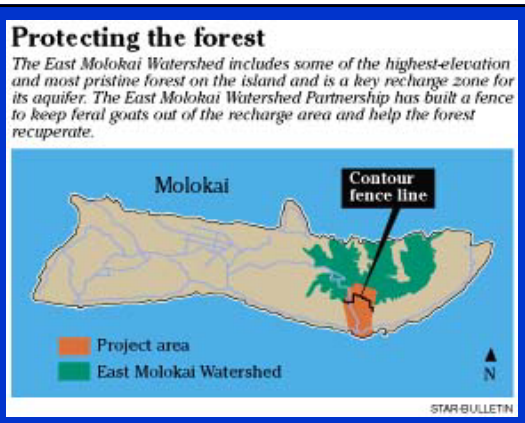
Club Lanai 2002

Sediment damage to corals - Lanai



South Molokai

Palaau CRAMP site (Molokai).

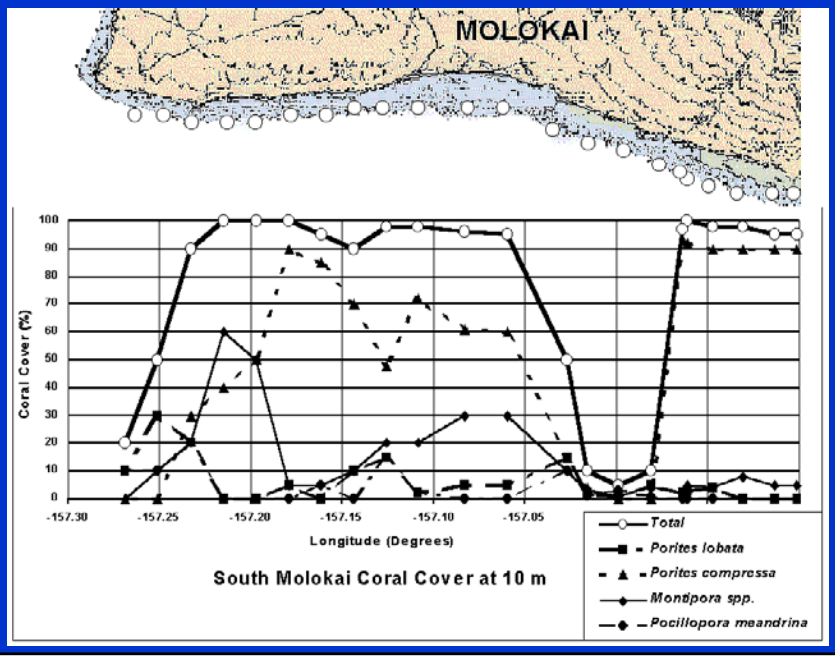


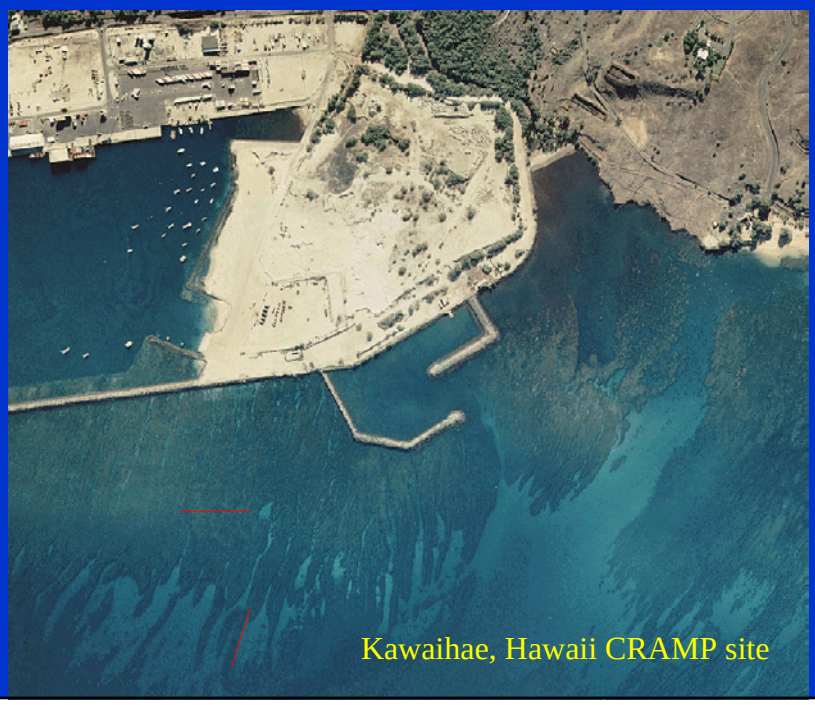
Diana Leone. Honolulu Star Bulletin. Saturday, March 9, 2002

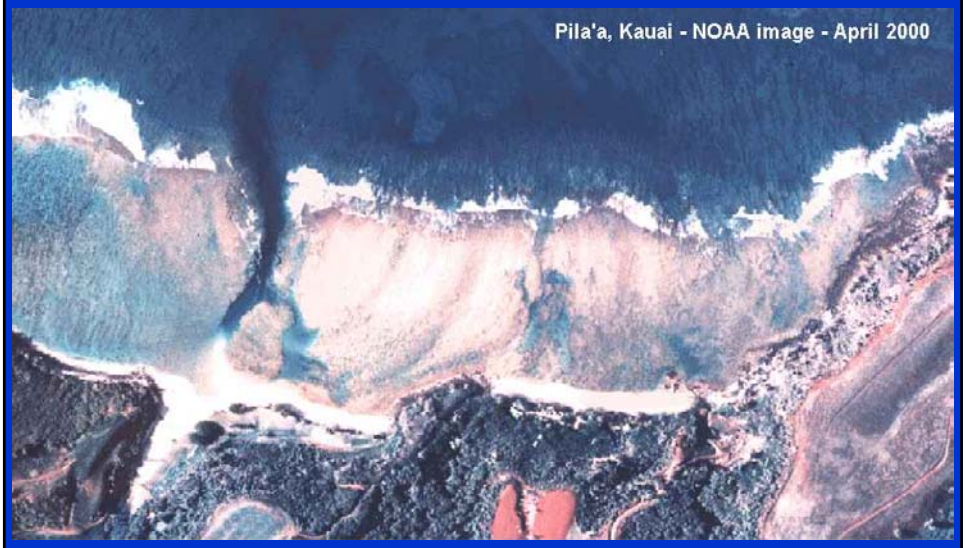
NATURE CONSERVANCY
By keeping feral goats out of higher elevations, the fence allows native vegetation to grow, which helps replenish the aquifer.
Now thousands strong in the ahupuaa of Kamalo and Kapualei on the island's south slope, the goats' incessant grazing has moved the native ohia forest farther up the mountain.

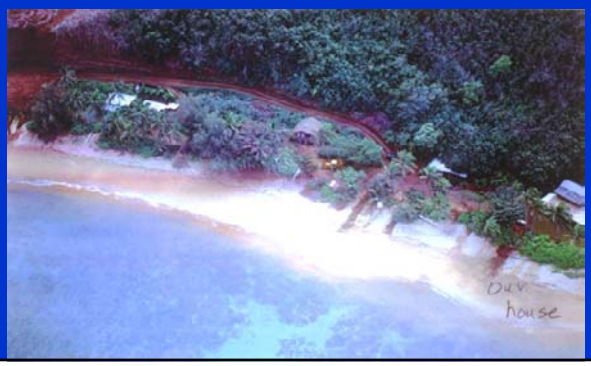
Kamalo, Molokai 27 November 2001

Kaunakakai and Kamiloloa CRAMP site (Molokai).


MOLOKAI
Coral Cover (%)
100
90
80
70
60
50
40
30
20
10
0
-157.30
-157.25
-157.20
-157.15
-157.10
-157.05
Longitude (Degrees)
South Molokai Coral Cover at 10 m
Total
Porites lobata
Porites compressa
Montipora spp.
Pocillopora meandrina

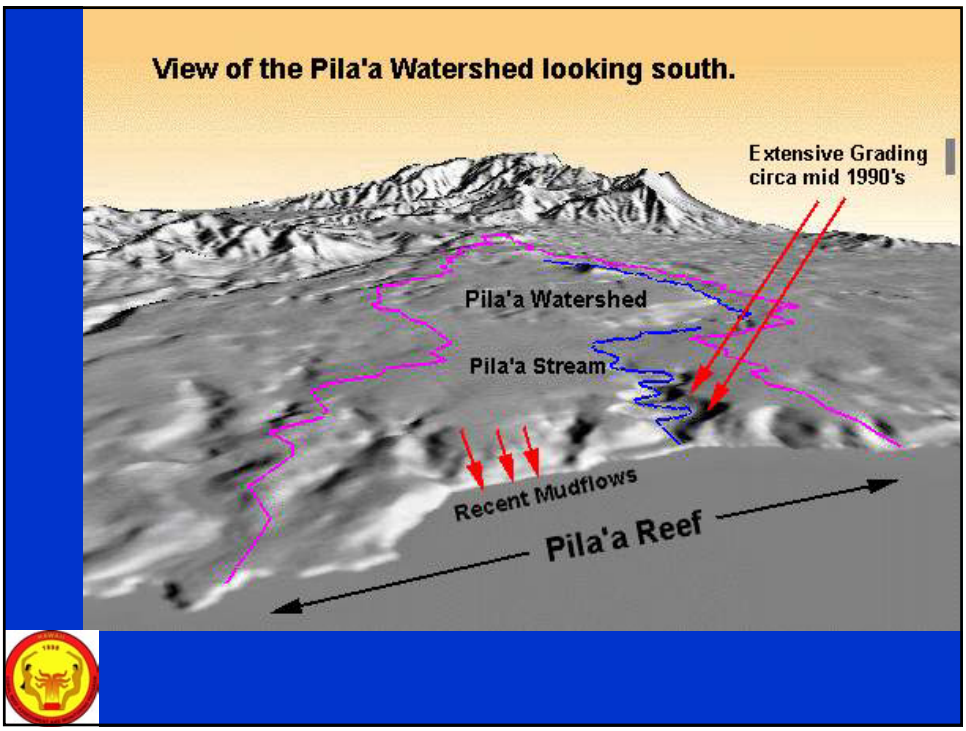

Kawaihae, Hawaii CRAMP site

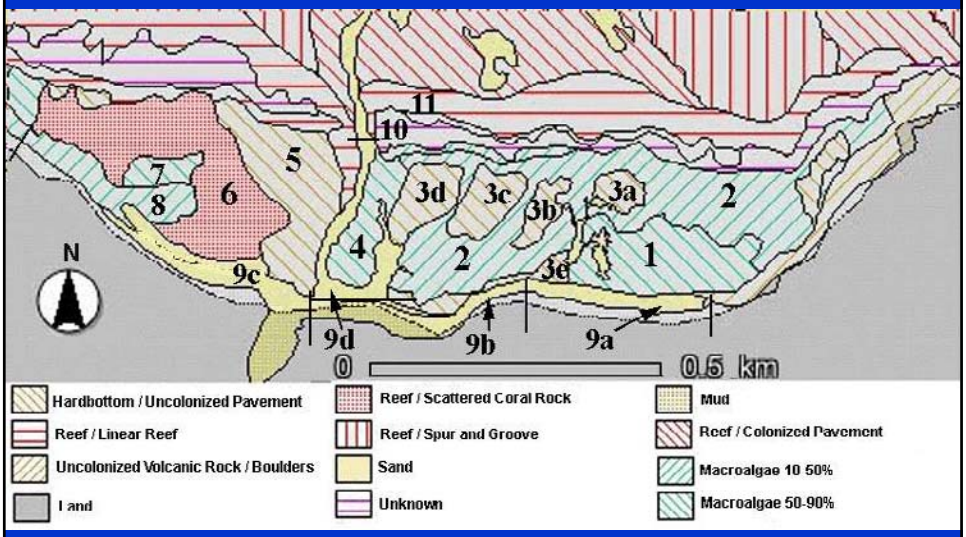




Mud Flows
Pilaa, Kauai

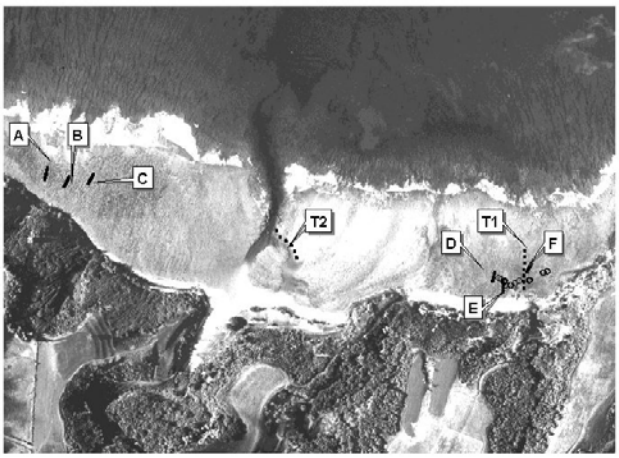
Mud Flow-
Marvin
Home
Pilaa, Kauai



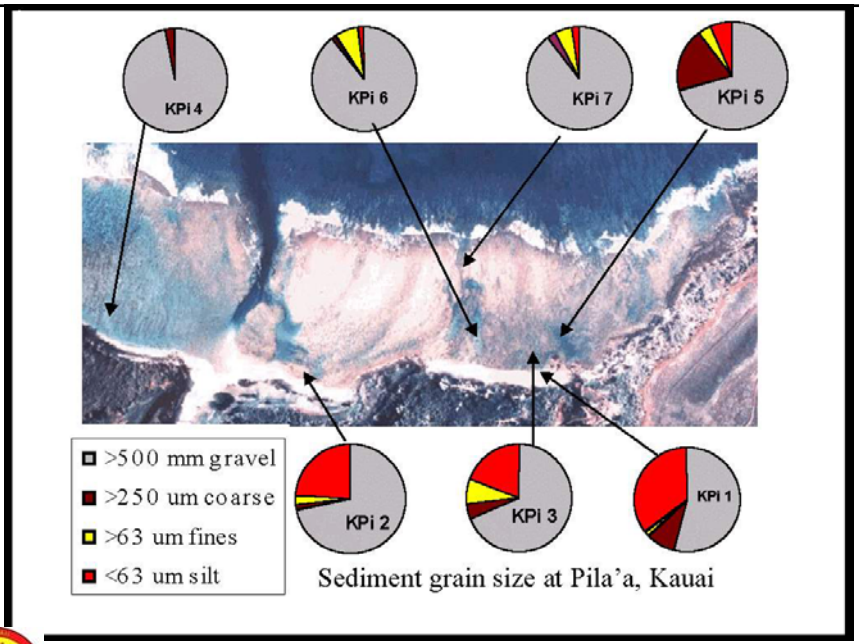


Pilaa, Kauai

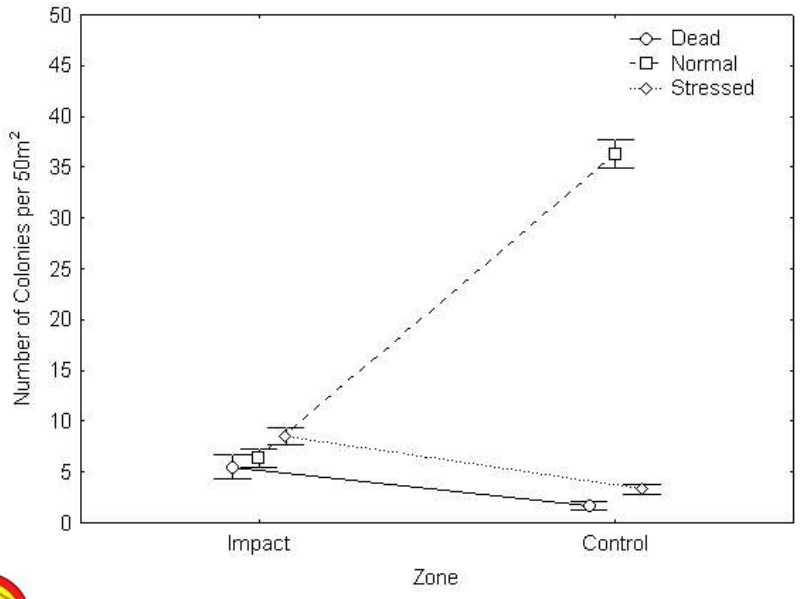
Transect Locations



Pilaa, Kauai



Sediment grain size at Pila'a, Kauai



Pilaa, Kauai

1.What type of monitoring is most useful for understanding the role of pollutant impacts on reefs?

Understanding the role of pollutant impacts on reefs determines what type of monitoring is most useful.

2. What pollutants are most useful to monitor?

Humans
Humans
Humans

3. What tools should be developed further in order to assess impacts from land based pollution on reefs?

Implementation - use our existing tools-
Monitor
Assess
Enforce

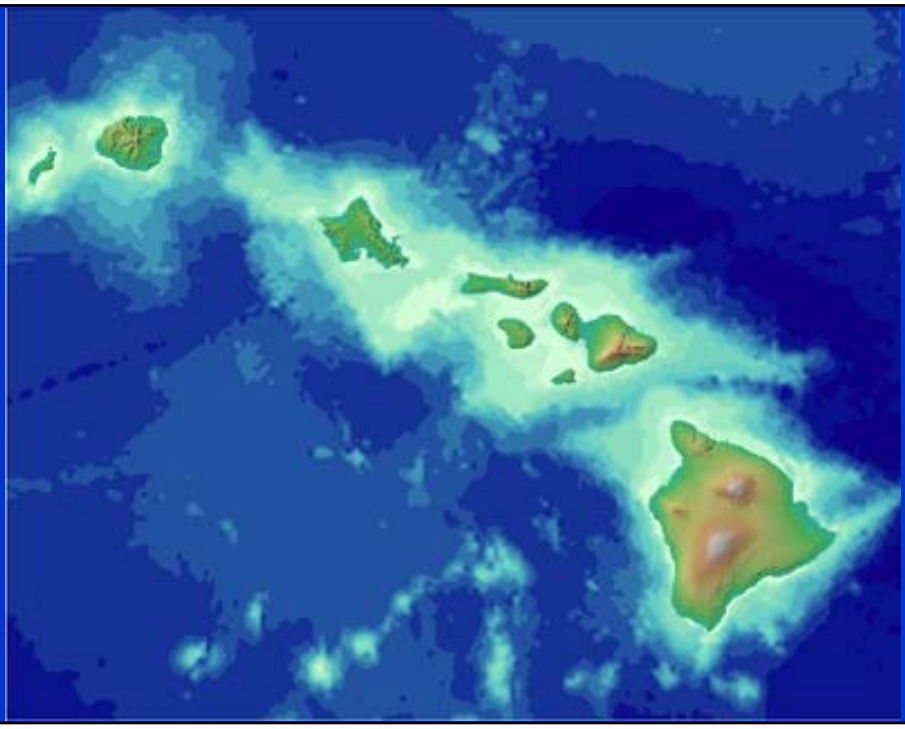
CRAMP is using an integrated approach:

1. MONITORING (detect change)

2. MAPPING/ HABITAT CLASSIFICATION

3. INFORMATION SYNTHESIS AND DISSEMINATION
   web development, bibliographic and data features, GIS based information base

4. CORAL REEF ECOSYSTEM STUDIES
   Map and quantify benthic/fish habitats, emphasis on increased spatial coverage.
   Tools now in place to deal with more extensive and complex questions.




HAWAII
1998
CORAL REEF ASSESSMENT AND MONITORING PROGRAM